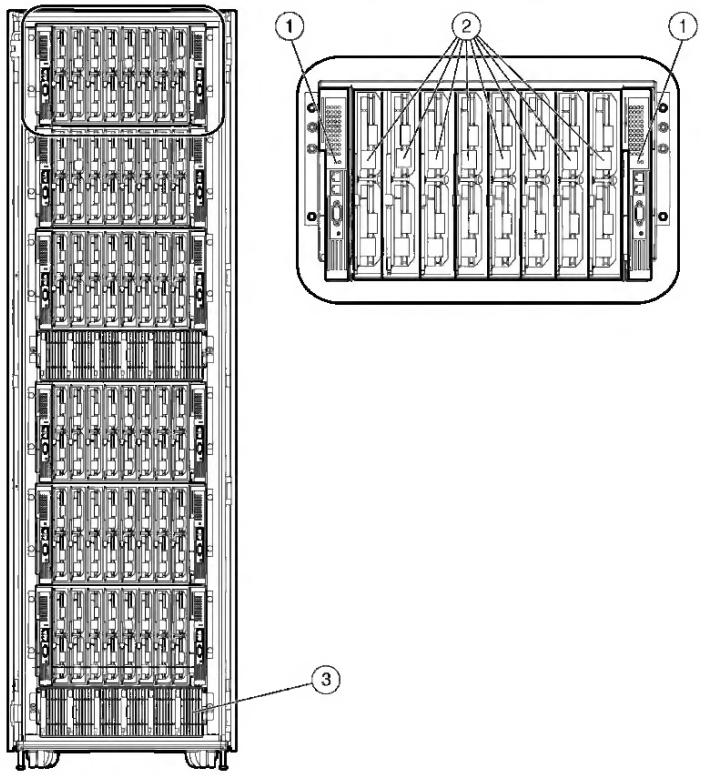
# *Overview*

## What's New

- Price/performance dual processor server blade designed with enterprise availability ProLiant BL20p Server Blade includes:
- Intel® Pentium® III FC-PGA 1.4 GHz processor (dual capability)
- ServerWorks HE- SuperLite Chipset
- 512-MB or 1024-MB PC133-MHz Registered ECC SDRAM memory, (2 x 1 Interleaved Memory), expandable to 4 GB
- Three NC3163 Fast Ethernet Embedded WOL (Wake On LAN) NICs standard
- Two NICs are upgradable to 10/100/1000T using the Dual Gigabit Ethernet NC7780 NIC option kit
- One additional 10/100 port dedicated to Integrated Lights-Out (iLO) Management
- Smart Array 5i Controller with battery-backed write cache option (integrated on system board)
- Wide Ultra3 SCSI Drive Cage standard supports up to two 1" Wide Ultra3 hot plug hard drives
- Integrated Lights-Out (iLO) Advanced Management (ASIC on motherboard)
- Plugs vertically into 8U enclosure
- Up to 48 BL20p blades fit in 42U rack
- ProLiant BL p-Class Server Blade Enclosure:
  - Server blades and interconnects blind mate into server blade enclosures for network connection and power
  - Server blade enclosure is 6U and holds up to 8 ProLiant BL20p server blades and 2 interconnects
  - 2 types of interconnects available: interconnect switches or patch panels
- ProLiant BL p-Class Power Enclosure:
  - Use BL p-Class sizing tool to determine power based on your configuration http://www.compaq.com/products/servers/proliant-bl/p-class/index.html
    Note: This Web site is available in English only.
  - BL p-Class power enclosure provides shared, external, redundant power
  - Power enclosure is 3U and holds up to 8 hot-plug power supplies
  - Choose single-phase or three-phase power
  - BL p-Class power enclosure with power supplies not needed if using facility -48VDC ± 10% in this case purchase DC option kit
- ProLiant BL p-Class Power Distribution:
  - Distributes power from the power enclosure to the server blade enclosures
  - Three power distribution choices:
    - BL p-Class scalable bus bar
    - BL p-Class mini bus bar
    - BL p-Class power bus box
- BL p-Class server blade, server blade enclosure, interconnects and power enclosure protected by a limited three year warranty with optional service uplifts available
- Note: Power requirements for a ProLiant BL p-Class system: 200V – 240V AC, 30 amp or facility DC -48V ± 10%

**42U Rack with ProLiant BL p-Class System Installed**




1. BL p-Class interconnects (2) in BL p-Class server blade enclosure (interconnect switch shown)
2. BL20p server blades (8) in BL p-Class server blade enclosure
3. BL p-Class power enclosure with hot-plug power supplies (6)

COMPAQ



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## *Overview*

### Configuration Steps

- For a complete configuration of the ProLiant BL20p, do the following:

1. Select BL p-Class server blades
   - Single Intel Pentium III 1.40-GHz processor, 512-MB ECC SDRAM (230040-B21)

   or

   - Two Intel Pentium III 1.40-GHz processors, 1-GB ECC SDRAM (Note: Additional options include processors, memory, and Gb NIC) (257959-B21)

   *PLUS*
2. Decide how many *BL p-Class* Server Blade Enclosures to purchase (each enclosure can hold up to 8 ProLiant BL20p server blades)
   - BL p-Class server blade enclosure with 8 Rapid Deployment Pack licenses (281404-B21)

   or

   - BL p-Class server blade enclosure with Rapid Deployment Pack *trial* (243564-B21)

   *PLUS*
3. Select an Interconnect. Interconnects are sold in pairs. One pair of Interconnects is required with each *BL p-Class* server blade enclosure
   - BL p-Class RJ-45 Patch panel (with 32 RJ-45 connectors) (230766-B21)

   or

   - ProLiant BL p-Class C-GbE Interconnect Kit (with 4 RJ-45 10/100/1000 T/TX/T and 4 RJ-45 10/100 T/TX uplink connectors) (249655-B21)

   or

   - ProLiant BL p-Class F-GbE Interconnect Kit (with 4 LC 1000 SX and 4 RJ-45 10/100 T/TX uplink connectors) (279720-B21)

   *PLUS*
4. Select BL p-Class power enclosure and power supplies based on configuration. Use p-Class sizing tool to help determine power configuration http://www.compaq.com/products/servers/proliant-bl/p-class/index.html
   Note: This Web site is available in English only.
   Note: Power enclosures and supplies are not needed if using facility DC (-48V ± 10%).
   - Single phase power enclosure with four hot-plug power supplies (239162-001)

   or

   - Three-phase power enclosure with six hot-plug power supplies (230769-001)

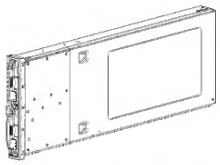
   *PLUS*
5. Select power distribution
   - Scalable bus bar - Supports up to 5 server blade enclosures (240560-B21)

   or

   - Mini bus bar – Supports up to 3 server blade enclosures (240559-B21)

   or

   - Power Bus Box - connects 1 power enclosure to 1 server blade enclosure (240562-B21)



**ProLiant BL20p Server Blade**

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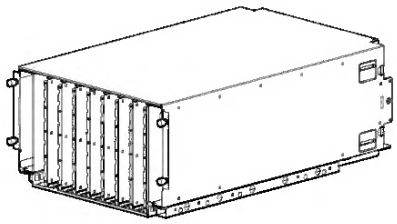

**BL p-Class Server Blade Enclosure**

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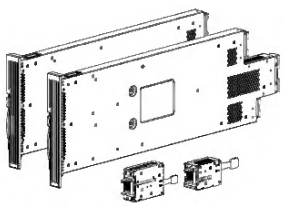
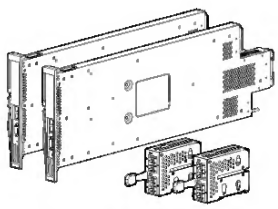


Patch panel

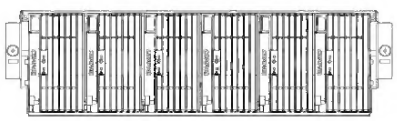
**OR**



Interconnect Switch (fibre or copper based)

**BL p-Class Interconnects**

+



**OR Facility DC**

**BL p-Class power enclosure and power supplies**

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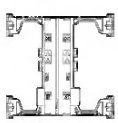
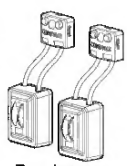
Scalable bus bar

**OR**



Mini bus bar

**OR**



Bus boxes

**BL p-Class power distribution**



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# *Standard Features*

## *Compaq ProLiant BL20p Server Blade*

| | | |
|---|---|---|
| Processor | Intel Pentium III FC-PGA processor 1.40GHz | |
| Upgradability | Upgradable to dual processing | |
| Cache Memory | 512-KB Level 2 Cache | |
| Chipset | ServerWorks HE- SuperLite Chipset<br>Note: For more information regarding ServerWorks, please see the following URL:<br>http://www.serverworks.com/products/overview.html.<br>Note: This Web site is available in English only. | |
| Memory | Standard | 512MB PC133-MHz Registered ECC SDRAM DIMM Memory (2 X 256 MB) (1 processor model) |
| | Maximum | 4096 MB |
| | Standard | 1024MB PC133-MHz Registered ECC SDRAM DIMM Memory (2 x 512 MB) (2 processor model) |
| | Maximum | 4096 MB |
| | Note: Memory must be installed in pairs. | |
| Network Controller | Four NICs total:<br>Three Compaq NC3163 Fast Ethernet NIC PCI 10/100 with full WOL (Wake On LAN), one with PXE support<br>One 10/100 iLO NIC dedicated to management<br>Two NICs are upgradable to 10/100/1000T using the Dual Gigabit Ethernet NC7780 NIC option kit | |
| Manageability | Integrated Lights-Out (iLO) Management Advanced (ASIC on the System Board) | |
| Internal Storage | Hard Drives | None ship standard |
| | Maximum Internal Storage | 145.6 GB (internal drive cage) (2 x 72.8 GB Wide Ultra3, 1″ drives) |
| Expansion Slots | No PCI slots all features are integrated | |

## *Compaq ProLiant BL p-Class Server Blade Enclosure and Interconnects*

| | |
|---|---|
| ProLiant BL p-Class Server Blade Enclosure | 6U (10.5-inch), 19-inch wide<br>Holds up to 8 ProLiant BL20p servers blades<br>10 bays per server blade enclosure<br>8 bays for server blades<br>2 outside bays for interconnect modules (RJ-45 patch panels or GbE interconnect switches)<br>Server blades blind mate into the server blade enclosure backplane for power and data connections<br>Up to 6 BL p-Class 6U server blade enclosures fit in a 42U rack<br>Server blade management module attached to the back of each BL p-Class 6U server blade enclosure to report events all servers and provide asset and inventory information |
| ProLiant BL p-Class Power Requirements | Redundant 200V – 240V AC, 30 amp single-phase<br>Redundant 208V 30amp 3-phase 4 wire,<br>Redundant -48VDC ± 10% |



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## *Standard Features*

### *Compaq ProLiant BL p-Class Server Blade Enclosure and Interconnects (continued)*

**ProLiant BL p-Class Interconnect Switch Option**
(Two switches per kit)
(Every BL p-Class server blade enclosure requires two Interconnect switches OR two RJ-45 patch panels)

Provides up to a 32 to 1 server networking cable reduction per server enclosure. Each interconnect switch (two per enclosure) reduces sixteen 10/100 Base-T/Base-TX server network ports to four uplinks ports (eight uplinks total). Only one to all eight uplinks may be used per enclosure.

The ProLiant BL p-Class F-GbE Interconnect Kit includes two GbE interconnect switches and two DualTSX Interconnect Modules that provide four (4) LC 1000 SX and four (4) RJ-45 10/100 T/TX uplink ports per server enclosure.

The ProLiant BL p-Class C-GbE Interconnect Kit includes two GbE interconnect switches and two QuadT Interconnect Modules that provide four (4) RJ-45 10/100/1000 T/TX/T and four (4) RJ-45 10/100 T/TX uplink ports per server enclosure.

Also included (per Interconnect Switch):

- Two (2) RJ-45 10/100 T/TX front panel ports for management or additional uplinks
- One (1) RS-232 DB-9 front panel out-of-band management port
- Redundant 10/100 cross links ports connecting the two Interconnect Switches
- Redundant power and cooling inputs
- Hot-plug and hot- remove with configuration retention capability
- Power ON, management, and per port status and speed LED indicators
- Reset/power momentary push-button switch
- Compaq ProLiant BL Interconnect Switch Management Utilities and User Documentation CD
- Fully pre-configured for rapid deployment and immediate operation

ProLiant BL Interconnect Switch Management System and Utilities:

Full featured web-based interface, menu-driven console interface, Telnet, SNMP-based scripting utility and example scripts, SNMP and RMON MIBs, BootP and DHCP client, port mirroring, QoS packet prioritization, IGMP multicasting, and TFTP server utilities for management of interconnect switch.

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**ProLiant BL p-Class RJ-45 patch panel**
(Two patch panels per kit)
(Every BL p-Class server blade enclosure requires two Interconnect switches OR two RJ-45 patch panels)

6U (10.5-inch), Plugs into BL p-Class 6U server blade enclosures

Used to pass NIC signals from all server blades in server blade enclosure out as RJ-45 connections

Supports Gigabit Ethernet network controllers

16 RJ-45 connectors on the back of each BL p-Class 6U RJ-45 patch panel (32 RJ-45 connections per server blade enclosure)

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**Required Network Cabling**

| | |
|---|---|
| 10Base-T | Categories 3, 4 or 5 UTP (100 metres) |
| | EIA/TIA-568 100-ohm STP (100 metres) |
| 100Base-TX | Category 5 UTP (100 metres) |
| | EIA/TIA-568 100-ohm STP (100 metres) |
| 1000Base-T | Category 5 UTP (100 metres) |
| | EIA/TIA-568 100-ohm STP (100 metres) |
| 1000Base-SX | 50/125 µm Multimode Fiber, 400 MHz/Km (500 metres) |
| | 50/125 µm Multimode Fiber, 500 MHz/Km (550 metres) |
| | 62.5/125 µm Multimode Fiber, 160 MHz/Km (220 metres) |
| | 62.5/125 µm Multimode Fiber, 200 MHz/Km (275 metres) |

Note: For cabling information, refer to the Compaq Web site at: http://www.compaq.com/products/servers/.
Note: This Web site is available in English only.

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**Compaq ProLiant BL p-Class Power System and Rack Information**

Note: To determine power configuration please refer to the ProLiant BL p-Class Overview and Planning Whitepaper and sizing tool, please see the following URL:
http://www.compaq.com/products/servers/proliant-bl/p-class/index.html.
Note: This Web site is available in English only.

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**ProLiant BL p-Class Power Enclosure**

3U (5.25-inch), 19-inch wide, 29-inch deep (0.48-metre wide, 0.74-metre deep), Dual input single phase and three phase models available

BL p-Class power enclosure provides external, shared hot-plug power. Each power enclosure houses up to six hot-plug power supplies to power the BL p-Class server blades and interconnects

Power enclosures and power supplies are not needed if using facility DC (-48V DC ± 10%). If using facility DC, only Facility DC Power Connection kit part number (240563-B21) is needed.



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## *Standard Features*

### *Compaq ProLiant BL p-Class Server Blade Enclosure and Interconnects (continued)*

**BL p-Class Power Distribution**

In the ProLiant BL p-Class infrastructure, redundant -48 VDC power (from the power enclosures or facility DC power) is distributed from the power enclosures to the server blade enclosures through the Compaq bus bar system. Hinges attach the ProLiant BL bus bars to the rails in a rack. The bus bars swing open from the centre to enable easy rear access to the server blades and network cables. Power is distributed redundantly through independent A- and B-sided bus bars.

Three different power distribution solutions are available depending on the maximum number of server blade enclosures planned for the rack:

- Compaq ProLiant BL p-Class scalable bus bar
- Compaq ProLiant BL p-Class mini bus bar

Note: To support a full 42U rack of BL20p server blades (6 server blade enclosures), two mini bus bars are needed.

- Compaq ProLiant BL p-Class power bus box

| | Power Enclosures Supported | Server Blade Enclosures Supported | Max. Rack Space Occupied |
|---|---|---|---|
| Scalable Bus Bar | 1 or 2 | ≤ 5 | 36U |
| Mini Bus Bar | 1 | ≤ 3 | 21U |
| Power Bus Box | 1 | 1 | 9U |

**Required Power Source**

Two 30amp redundant power feeds per power enclosure

Connectors

–NEMA receptacles

| | |
|---|---|
| NA 1-phase | L6-30, 250v, 30A 3-wire |
| NA 3-phase | L15-30, 250V, 30A, 4-wire |

Optimized for power cabling from bottom and network cabling from top

For cabling information, refer to the Compaq Web site at
http://www.compaq.com/products/servers/
Note: This Web site is available in English only.



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## *Standard Features*

### *Compaq ProLiant BL p-Class Server Blade Enclosure and Interconnects (continued)*

| | | |
|---|---|---|
| ProLiant Essentials Foundation Pack Software | *Optional* ProLiant Essentials Value Packs | Optional software offerings that selectively extend the functionality of an Adaptive Infrastructure to address specific business problems and needs:<br>• Rapid Deployment Pack – an automated solution for multi-server deployment and provisioning, enabling companies to quickly and easily adapt to changing business demands.<br>• Workload Management Pack – provides easier management of complex environments, improving overall server utilization and enabling Windows 2000 customers for the first time to confidently deploy multiple applications on a single multiprocessor ProLiant Server.<br>• Integrated Lights-Out Advanced Pack - The BL20p includes the advance version of the Integrated Lights-Out which includes graphical console and virtual media. |
| | *Insight Manager™ 7* | Insight Manager 7 helps maximize system uptime and performance and reduces the cost of maintaining the IT infrastructure by providing proactive notification of problems before those problems result in costly downtime and reduced productivity. Insight Manager 7 is easy to set up and provides rapid access to detailed fault and performance information gathered by the Management Agents. One-click-access to the Remote Insight Lights Out Edition board allows systems administrators to take full graphical control of ProLiant servers in remote locations or lights-out data centres. Finally, Insight Manager 7 in concert with the Version Control Agents and Version Control Repository Manager enables systems administrators to version manage and update system software across groups of Compaq ProLiant servers. |
| | Management Agents | The Management Agents (http://www.compaq.com/products/servers/management/agents.html) form the foundation for Compaq's Intelligent Manageability strategy. They provide direct, browser-based access to in-depth instrumentation built into ProLiant servers, workstations, desktops, and portables, and send alerts to Insight Manager 7 and other management consoles in case of subsystem or environmental failures. For additional information about the Management Agents and other management product from Compaq, please visit the management Web site at http://www.compaq.com/manage.<br>Note: These Web sites are available in English only. |
| | Compaq ActiveUpdate | ActiveUpdate is a web-based application that keep IT managers directly connected to Compaq for proactive notification and delivery of the latest software updates. |
| | Compaq ROMPaq, support software, and configuration utilities | The latest software, drivers, and firmware fully optimized and tested for your ProLiant server and options. |
| | Compaq Survey Utility and diagnostics utilities | The most advanced configuration analysis, reporting and troubleshooting utilities used by Compaq and at your fingertips. |
| | Compaq Health Driver | Health Drivers interface with the Integrated Lights-Out ASIC to provide system management support, including monitoring of server components, event logging and support for the Compaq Insight Management Agents. |
| | Compaq iLO Management Interface Driver | The iLO Management Interface Driver provides access to the iLO management processor for Insight Management Agents. This interface is used to provide SNMP alert forwarding and management agent integration. |
| | | Note: For more information regarding ProLiant Essentials Software, please see the following URL: http://www.compaq.com/proliantessentials.<br>Note: This Web site is available in English only. |



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## *Standard Features*

### *Compaq ProLiant BL p-Class Server Blade Enclosure and Interconnects (continued)*

**OS Support**

Microsoft® Windows® 2000

LINUX® (Red Hat® and SuSE®)

Microsoft .NET™ Server

Note: For a more complete and up-to-date listing of supported OS's and versions, please visit our OS Support Matrix at: ftp://ftp.compaq.com/pub/products/servers/os-support-matrix-310.pdf.

Note: For an up-to-date listing of the latest drivers available for the Compaq ProLiant BL p-Class, please see: http://www.compaq.com/support/files/server/us/index.html.

Note: These Web sites are available in English only.

**Intelligent Manageability**

Integrated Lights-Out Advanced (iLO)

- Virtual Text and Graphical Remote Console *
- Virtual Floppy *
- Virtual Power Button Control
- Dedicated LAN Connectivity
- Automatic IP Configuration via DHCP/DNS/WINS
- Industry Standard 128-bit Secure Sockets Layer (SSL) Security
- IML and iLO Event Logging
- Support for 12 user accounts with customizable access privileges

Automatic Server Recovery-2 (ASR-2)
Compaq Insight Manager 7
Redundant ROM
Remote Flash ROM
ROM Based Setup Utility (RBSU)
Advanced Configuration and Power Interface Specification Ready (ACPI)
Server Health Logs
Compaq Redundant Power Supply Utility
Pre-Failure Warranty (covers processors, as well as hard drives and memory)
Compaq Interconnect Switch Management System and Utilities (interconnect switch option)
Integrated Management Log (IML)
Off-Line Backup Processor capability
Dynamic sector repairing and drive parametre tracking (with Smart Array controllers)
Redundant/adaptive load balancing NIC Support

* Advanced features such as Graphical Remote Console and Virtual Floppy are included with the BL p-Class server.

**Availability**

Power redundancy: Redundant AC feeds into power enclosures, redundant DC feeds from power enclosure to server blade enclosures, 1 + 1 redundant power supplies

Two hot-plug SCSI hard drive bays and integrated RAID (Smart Array 5i) on every server blade (Battery-backed write cache is optional.)

Redundant ROM on each server blade

ECC Memory

Interconnects Switch Availability

- Hot-plug and hot- remove with configuration retention capability
- Two network connections per server blade bay (four NICs total) routed to two redundant interconnect switches
- Redundant inter-switch communication with two sets of redundant uplink ports per each interconnect switch
- IEEE 802.1D Spanning tree protocol support for loop-free path redundancy
- Static IEEE 802.3ad (EtherChannel compatible) trunking with automatic port load balancing

Network adapter teaming (network fault tolerance, transmit load balancing, switch-assisted load balancing)



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## *Standard Features*

### *Compaq ProLiant BL p-Class Server Blade Enclosure and Interconnects (continued)*

**Security**

Power-on password
Administrator's password
Integrated Lights-Out has 12 customizable user accounts and SSL encryption
Integrated Lights-Out can be disabled via a Global Setting
Interconnect Switch multilevel user names and passwords and management interface time out period setting
Up to 64 Port-based IEEE 802.1Q tagged VLANs per interconnect switch

**Minimum Rack Requirements**

Mounts in Compaq, and Telco racks and Third Party racks that meet the following criteria:

- Compatible with 19-inch Standard EIA rail sets
- EIA rail-to-rail depth is 29 – 30″
- Cabinet depth must be at least 36-inch deep overall (Additional min. 3.5-inch clearance from rear RETMA rail to rear door, inclusive in the 36-inch overall depth)
- Ample room for top and bottom cable egress (approximately 8 square inches for full rack configuration with patch panel)
- Must be capable of supporting 1600 lb (for full rack configuration)
- Perforated front and rear doors to accommodate front-to-back cooling
- Must have 65% open perforation on server blade enclosure doors to support airflow requirements
- Optimized for use with the Compaq 10000 Series racks

Note: If using Compaq 7000 Series rack, Compaq Rack Extension Kit and High Air Flow Rack Door options are required.

**Rack Airflow Requirements**

- Rack 9000 and 10000 series Cabinets

  The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The Compaq 9000 Series Rack and the new 10000 Series Racks provides enhanced airflow for maximum cooling, allowing these racks to be fully loaded with servers using the latest processors.

- Rack 7000 series Cabinets

  When installing a server with processors running at speeds of 550 MHz or greater in Compaq Rack 7000 series racks with glass doors (165753-001 (42U), and 163747-001 (22U)), the new processor technology requires the installation of Compaq's new High Airflow Rack Door Inserts (327281-B21 (42U), 327281-B22 (42U 6 pack), or 157847-B21 (22U)) to promote enhanced airflow for maximum cooling.

CAUTION: If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:

- Front and rear doors: If your 42U server rack includes closing front and rear doors, you must allow 830 square inches (5,350 sq cm) of hole evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).
- Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 2.75 inches (7 cm)

CAUTION: Always use blanking panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

Note: For additional information, refer to the Setup and Installation Guide or the Documentation CD provided with the server, or to the server documentation located in the Support section at the following URL: http://www5.compaq.com/products/servers/proliantdl380/index.html.
Note: This Web site is available in English only.



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## *Standard Features*

### *Compaq ProLiant BL p-Class Server Blade Enclosure and Interconnects (continued)*

**Service and Support**

Compaq Services provides a three-year, limited warranty, including Pre-Failure Warranty (coverage of hard drives, memory and processors) fully supported by a worldwide network of resellers and service providers. Compaq technical assistance is available 7x24, toll free in the United States and Canada. Telephone support services may be covered under warranty or available for an additional fee.

Note: Limited Warranty includes 3 year Parts, 3 year Labour, 3-year on-site support.

A full range of *CarePaq*™ packaged hardware and software services:

- Installation and start up
- Extended coverage hours and enhanced response times
- System management and performance services
- Availability and recovery services

Note: For more information, customer/resellers can contact http://www.compaq.com/services.

Please see the following URL regarding Warranty Information For Your Compaq Products: http://www.compaq.com/support/warranty_upgrades/web_statements/176738.html.

For additional information regarding Worldwide Limited Warranty and Technical Support, please see the following URL: ftp://ftp.compaq.com/pub/supportinformation/ejourney/176738.pdf.

Note: These Web sites are available in English only.

Note: Certain restrictions and exclusions apply. Consult the Compaq Customer Support Centre at 1-800-567-1616 for details.



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## *Models*

| | | |
|---|---|---|
| ProLiant BL20p P1400-512KB, 512MB (1P)<br>*230040-B21* | Processor(s) | (1) Intel Pentium III 1.40 GHz standard (up to 2 supported) |
| | Cache Memory | 512-KB Level 2 writeback per processor |
| | Memory | 512 MB (Standard) to 4096 MB PC133-MHz Registered ECC SDRAM DIMM Memory |
| | Network Controller | Three Compaq NC3163 Fast Ethernet NIC PCI 10/100 with full WOL (Wake On LAN); one NIC has PXE support<br>One additional 10/100 port dedicated to iLO Management |
| | Storage Controller | Smart Array 5i Controller (integrated on system board) |
| | Hard Drives | None ship standard |
| | Internal Storage | Up to 145.6-GB maximum (with optional hard drives) |
| | Optical Drive | None |
| | Form Factor | Plugs vertically into Compaq ProLiant BL p-Class Server Blade Enclosure |
| ProLiant BL20p P1400-512KB, 1GB (2P)<br>257959-B21 | Processor(s) | (2) Intel Pentium III 1.40 GHz standard (up to 2 supported) |
| | Cache Memory | 512-KB Level 2 writeback per processor |
| | Memory | 1024 MB (Standard) to 4096 MB PC133-MHz Registered ECC SDRAM DIMM Memory |
| | Network Controller | Three Compaq NC3163 Fast Ethernet NIC PCI 10/100 with full WOL (Wake On LAN); one NIC has PXE support<br>One additional 10/100 port dedicated to iLO Management |
| | Storage Controller | Smart Array 5i Controller (integrated on system board) |
| | Hard Drives | None ship standard |
| | Internal Storage | Up to 145.6-GB maximum (with optional hard drives) |
| | Optical Drive | None |
| | Form Factor | Plugs vertically into Compaq ProLiant BL p-Class Server Blade Enclosure |



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## *Options*

| | | |
|---|---|---|
| ProLiant BL20p Unique Options | Dual NC7780 Gigabit Upgrade Module for ProLiant BL20p | 230255-B21 |
| | Note: The Dual NC7780 Gigabit Upgrade Module replaces two of the standard NC3163 Fast Ethernet Embedded WOL (Wake On LAN) NICs to two 10/10/1000T NC7780 NICs | |
| | Note: The GbE Interconnect Switch options support server NIC speeds to 100 Mbps. It is recommended that the patch panel be used with the Dual NC7780 Gigabit Upgrade Module if server NIC speeds to 1000 Mbps are required. | |
| | ProLiant BL p-Class Server Blade Enclosure (ProLiant Essentials Rapid Deployment Pack Trial) | 243564-B21 |
| | ProLiant BL p-Class Server Blade Enclosure (8 ProLiant Essentials Rapid Deployment Pack Licenses) | 281404-B21 |
| | ProLiant BL p-Class RJ-45 Patch panel (pair)<br>Note: Only one interconnect kit required per server blade enclosure | 230766-B21 |
| | ProLiant BL p-Class C-GbE Interconnect Kit (with pair of GbE Interconnect Switches and two QuadT Interconnect Modules)<br>Note: Only one interconnect kit required per server blade enclosure | 249655-B21 |
| | ProLiant BL p-Class F-GbE Interconnect Kit (with pair of GbE Interconnect Switches and two DualTSX Interconnect Modules)<br>Note: Only one interconnect kit required per server blade enclosure | 279720-B21 |
| | Single Phase Redundant Power with 4 power supplies | 239162-001 |
| | 3 Phase Redundant Power with 6 power supplies | 230769-001 |
| | Single Phase Power Enclosure (empty) | 231710-001 |
| | 3 Phase Power Enclosure (empty) | 231709-001 |
| | Single Power Supply | 239161-B21 |
| | Facility DC Power Connection | 240563-B21 |
| | ProLiant p-Class Scalable Bus Bar | 240560-B21 |
| | ProLiant p-Class Mini Bus Bar | 240559-B21 |
| | ProLiant p-Class Bus Power Box | 240562-B21 |
| ProLiant Essentials Value Pack Software | Rapid Deployment Pack, 10 User, V1.x<br>Note: This license allows 10 servers to be managed and deployed via the Deployment Server.<br>Note: Not necessary if you purchase the server blade enclosure with 8 Rapid Deployment Pack licenses 281404-B21. | 269817-B21 |
| | Rapid Deployment Pack, 1 User, V1.x<br>Note: This license allows 1 server to be managed and deployed via the Deployment Server.<br>Note: Not necessary if you purchase the server blade enclosure with 8 Rapid Deployment Pack licenses 281404-B21. | 267196-B21 |
| | ProLiant Essentials Workload Management Pack (Featuring Compaq Resource Partitioning Manager version 1.1) | 266988-B21 |
| | Note: For more information regarding ProLiant Essentials Software, please see the following URL: http://www.compaq.com/proliantessentials<br>Note: Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to URL http://www.compaq.com/proliantessentials or the various ProLiant Essentials Value Pack product QuickSpecs for more information.<br>Note: These Web sites are available in English only. | |
| Processor | Pentium III P1400-512KB Processor Option Kit | 234277-B21 |
| Memory (SDRAM DIMMs) | 2048 MB PC133MHz Registered ECC SDRAM Memory Kit (2x1024 MB) | 201695-B21 |
| | 1024 MB PC133MHz Registered ECC SDRAM Memory Kit (2x512 MB) | 201694-B21 |
| | 512 MB PC133MHz Registered ECC SDRAM Memory Kit (2x256 MB) | 201693-B21 |
| | 256 MB PC133MHz Registered ECC SDRAM Memory Kit (2x128 MB) | 201692-B21 |



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## *Options*

| | | |
|---|---|---|
| Hard Drives | *Wide Ultra3 SCSI – Universal Hot Plug* | |
| | 72 8-GB Wide Ultra3 SCSI 10,000 rpm Drive (1") | 232432-B22 |
| | 36 4-GB Wide Ultra3 SCSI 10,000 rpm Drive (1") | 176496-B22 |
| | 18 2-GB Wide Ultra3 SCSI 10,000 rpm Drive (1") | 142673-B22 |
| | 36 4-GB Wide Ultra3 SCSI 15,000 rpm Drive (1") | 232916-B22 |
| | 18 2-GB Wide Ultra3 SCSI 15,000 rpm Drive (1") | 188122-B22 |
| Storage Controllers | Battery Backed Write Cache Enabler Option Kit | 255514-B21 |
| Communications | Dual NC7780 Gigabit Upgrade Module for ProLiant BL20p | 230255-B21 |
| | Note The Dual NC7780 Gigabit Upgrade Module replaces two of the standard NC3163 Fast Ethernet Embedded WOL (Wake On LAN) NICs to two 10/10/1000T NC7780 NICs | |
| | Note The GbE Interconnect Switch options support server NIC speeds to 100 Mbps. It is recommended that the patch panel be used with the Dual NC7780 Gigabit Upgrade Module if server NIC speeds to 1000 Mbps are required | |
| BL p-Class Server Blade Enclosures | ProLiant BL p-Class Server Blade Enclosure (ProLiant Essentials Rapid Deployment Pack Tnal) | 243564-B21 |
| | ProLiant BL p-Class Server Blade Enclosure (8 ProLiant Essentials Rapid Deployment Pack Licenses) | 281404-B21 |
| BL p-Class Interconnects | ProLiant BL p-Class RJ-45 Patch panel (pair)<br>Note Only one interconnect kit required per server blade enclosure | 230766-B21 |
| | ProLiant BL p-Class C-GbE Interconnect Kit (with pair of GbE Interconnect Switches and two QuadT Interconnect Modules)<br>Note Only one interconnect kit required per server blade enclosure | 249655-B21 |
| | ProLiant BL p-Class F-GbE Interconnect Kit (with pair of GbE Interconnect Switches and two DualTSX Interconnect Modules)<br>Note Only one interconnect kit required per server blade enclosure | 279720-B21 |
| BL p-Class Power options | Single Phase Redundant Power with 4 power supplies | 239162-001 |
| | 3 Phase Redundant Power with 6 power supplies | 230769-001 |
| | Single Phase Power Enclosure (empty) | 231710-001 |
| | 3 Phase Power Enclosure (empty) | 231709-001 |
| | Single Power Supply | 239161-B21 |
| | Facility DC Power Connection | 240563-B21 |
| Power Distribution | ProLiant p-Class Scalable Bus Bar | 240560-B21 |
| | ProLiant p-Class Mini Bus Bar | 240559-B21 |
| | ProLiant p-Class Bus Power Box | 240562-B21 |
| Diagnostic Options | ProLiant p-Class Diagnostic Station | 230743-B21 |
| | Note The Diagnostic Station allows access to the ProLiant BL20p server blade and the BL p-Class interconnect switch outside of the server enclosure. The option provides power and a data interface so that "offline" upgrade and diagnostic functions may be performed | |



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## *Options*

| | | |
|---|---|---|
| Compaq Rack 10000 Series (Graphite Metallic) | Compaq Rack 10842 (42U) – Pallet | 257415-B21 |
| | Compaq Rack 10647 (47U) – Pallet | 245160-B21 |
| | Compaq Rack 10647 (47U) – Crated | 245160-B23 |
| | Compaq Rack 10642 (42U) – Pallet | 245161-B21 |
| | Compaq Rack 10642 (42U) – Shock Pallet | 245161-B22 |
| | Compaq Rack 10642 (42U) – Crated | 245161-B23 |
| | Compaq Rack 10636 (36U) – Pallet | 245162-B21 |
| | Compaq Rack 10636 (36U) – Shock Pallet | 245162-B22 |
| | Compaq Rack 10636 (36U) – Crate | 245162-B23 |
| | Compaq Rack 10622 (22U) – Pallet | 245163-B21 |
| | Compaq Rack 10622 (22U) – Shock Pallet | 245163-B22 |
| | Compaq Rack 10622 (22U) – Crated | 245163-B23 |
| | Note -B21 (pallet) used to ship empty racks shipped on a truck<br>-B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels)<br>-B23 (crated) used for air shipments of empty racks | |
| Compaq Rack 9000 Series (Opal) | Compaq Rack 9142 (42U) – Pallet | 120663-B21 |
| | Compaq Rack 9142 (42U) – Shock Pallet | 120663-B22 |
| | Compaq Rack 9142 (42U) – Crated | 120663-B23 |
| | Compaq Rack 9136 (36U) – Pallet | 120664-B21 |
| | Compaq Rack 9136 (36U) – Shock Pallet | 120664-B22 |
| | Compaq Rack 9136 (36U) – Crated | 120664-B23 |
| | Compaq Rack 9122 (22U) – Pallet | 120665-B21 |
| | Compaq Rack 9122 (22U) – Shock Pallet | 120665-B22 |
| | Compaq Rack 9122 (22U) – Crated | 120665-B23 |
| | Compaq Rack 9842 (800mm wide, 42U) - Pallet | 222192-B21 |
| | Note -B21 (pallet) used to ship empty racks shipped on a truck<br>-B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels)<br>-B23 (crated) used for air shipments of empty racks | |
| Rack Options for Compaq Rack 10000 Series | Rack Blanking Panels – Graphite (Multi)<br>Note Contains one each of 1U, 2U, 3U and 4U panel | 253214-B26 |
| | Rack Blanking Panels – Graphite (1U)<br>Note The Rack Blanking Panels (PN 253214-B21) contains 10 each of (1U) | 253214-B21 |
| | Rack Blanking Panels – Graphite (2U)<br>Note The Rack Blanking Panels (PN 253214-B22) contains 10 each of (2U) | 253214-B22 |
| | Rack Blanking Panels – Graphite (3U)<br>Note The Rack Blanking Panels (PN 253214-B23) contains 10 each of (3U) | 253214-B23 |
| | Rack Blanking Panels – Graphite (4U)<br>Note The Rack Blanking Panels (PN 253214-B24) contains 10 each of (4U) | 253214-B24 |
| | Rack Blanking Panels – Graphite (5U)<br>Note The Rack Blanking Panels (PN 253214-B25) contains 10 each of (5U) | 253214-B25 |
| | 800mm Stabilizer Option Kit (Graphite)<br>Note The 800mm Stabilizer Kit (PN 255488-B21) supports the Rack 9842 only | 255488-B21 |
| | 600mm Stabilizer Kit – Graphite | 246107-B21 |
| | Baying Kit for Rack 10000 series (Carbon) | 248929-B21 |
| | 42U Side Panel – Graphite Metallic | 246099-B21 |
| | 110V Fan Kit (Graphite)<br>Note Roof Mount Includes power cord withIEC320-C13 to NEMA 5-15P | 257413-B21 |



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## *Options*

| | | |
|---|---|---|
| Rack Options for Compaq Rack 10000 Series *(continued)* | 220V Fan Kit (Graphite)<br>Note Roof Mount Includes power cord with IEC320-C13 to NEMA 6-15P | 257414-B21 |
| | 36U Side Panel – Graphite Metallic | 246102-B21 |
| | 47U Side Panel – Graphite Metallic | 255486-B21 |
| | 9000/10000 Series Offset Baying Kit<br>Note This kit can be used to connect 9000 and 10000 series racks in 42U height together Kit contents include hardware for connecting racks and a panel to cover the 100mm gap at the rear of the two racks | 248931-B21 |
| Rack Options for Compaq Rack 9000 Series | Baying/Coupling Kit | 120669-B21 |
| | 42U Side Panel<br>Note The 42U Side Panel (PN 120670-B21) supports the Compaq Rack 9142 and Compaq Rack 9842 | 120670-B21 |
| | 36U Side Panel<br>Note The 36U Side Panel (PN 120671-B21) supports the Compaq Rack 9136 | 120671-B21 |
| | 600mm Stabilizer Option Kit | 120673-B21 |
| | 800mm Stabilizer Option Kit (Opal)<br>Note The 800mm Stabilizer Kit (PN 234493-B21) supports the Rack 9842 only | 234493-B21 |
| | Grounding Rack Option Kit | 120682-B21 |
| | Stabilizer Option Kit | 120673-B21 |
| | Rack Blanking Panel (Multi)<br>Note Kit includes four panels in 1U, 2U, 4U, and 8U | 169940-B21 |
| | 9142 Extension Kit<br>Note The 9142 Extension Kit (PN 120679-B21) supports the Compaq Rack 9142 only | 120679-B21 |
| | Rack Blanking Panels (1U)<br>Note The Rack Blanking Panels (PN 189453-B21) contains 10 each of (1U) | 189453-B21 |
| | Rack Blanking Panels (2U)<br>Note The Rack Blanking Panels (PN 189453-B22) contains 10 each of (2U) | 189453-B22 |
| | Rack Blanking Panels (3U)<br>Note The Rack Blanking Panels (PN 189453-B23) contains 10 each of (3U) | 189453-B23 |
| | Rack Blanking Panels (4U)<br>Note The Rack Blanking Panels (PN 189453-B24) contains 10 each of (4U) | 189453-B24 |
| | Rack Blanking Panels (5U)<br>Note The Rack Blanking Panels (PN 189453-B25) contains 10 each of (5U) | 189453-B25 |
| | 9136 Extension Kit | 218216-B21 |
| | 9142 Short Rear Door<br>Note The 9142 Short Rear Door (PN 218217-B21) supports the Compaq Rack 9142 only | 218217-B21 |
| | Split Rear Door (Opal)<br>Note The Split Rear Door (PN 254045-B21) supports the 600 mm wide, 42U 9000 series rack | 254045-B21 |
| | 9136 Short Rear Door | 218218-B21 |
| | 9142 Split Rear Door | 254045-B21 |
| | 9000/10000 Series Offset Baying Kit<br>Note This kit can be used to connect 9000 and 10000 series racks in 42U height together Kit contents include hardware for connecting racks and a panel to cover the 100mm gap at the rear of the two racks | 248931-B21 |



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## *Options*

| | | |
|---|---|---|
| Rack Options for Compaq Rack 7000 Series and Telco racks | High Air Flow Rack Door Insert for 7122 | 157847-B21 |
| | High Air Flow Rack Door Insert for 7142 (single) | 327281-B21 |
| | High Air Flow Rack Door Insert for 7142 (6-pack) | 327281-B22 |
| | Compaq Networking Cable Management Kit | 292407-B21 |
| | Compaq Networking Recessed Rail Management Kit | 292406-B21 |
| | Compaq Rack Extension Kit for 7142 | 154392-B21 |
| Rack Options for Compaq Rack 10000, 9000 and 7000 Series | Monitor Utility Shelf | 303606-B21 |
| | Ballast Option Kit | 120672-B21 |
| | 100kg Sliding Shelf | 234672-B21 |
| | Rack Rail Adapter Kit (25″ depth) | 120675-B21 |
| | Monitor/Utility Shelf - Graphite | 253449-B21 |
| | Depth Adjustable Fixed Rail | 332558-B21 |
| | Cable Management D-Rings Kit | 168233-B21 |
| | Console Management Controller (CMC) Option Kit | 203039-B21 |
| | Console Management Controller (CMC) Sensors Option Kit | 203039-B22 |
| | Console Management Controller (CMC) Locking Option Kit | 203039-B23 |
| | Console Management Controller (CMC) Smoke Sensor Option Kit | 203039-B24 |
| Rack Options for Telco Racks | Bus Bar Telco Rail Option Kit | 245249-B21 |
| | Enclosure Telco Rail Option Kit | 266076-B21 |
| Service and Support Offerings (CarePaq Services) | *Hardware Services 4-Hour On-site Service* | |
| | 3 yrs, 9x5, on-site hardware maintenance with a 4-hour response for a fully configured ProLiant BL p-Class server blade enclosure with interconnects and up to 8 server blades, power enclosure with power supplies and power distribution (6-3 part number for US) | 274369-002 |
| | 3 yrs, 24x7, on-site hardware maintenance with a 4-hour response for a fully configured ProLiant BL p-Class server blade enclosure with interconnects and up to 8 server blades, power enclosure with power supplies and power distribution (6-3 part number for US) | 274370-002 |
| | 3 yrs, 9x5, on-site hardware maintenance with a 4-hour response for a fully configured ProLiant BL p-Class server blade enclosure with interconnects and up to 8 server blades, power enclosure with power supplies and power distribution Electronic CarePaq service (6-3 part number for US) | 302329-001 |
| | 3 yrs, 24x7, on-site hardware maintenance with a 4-hour response for a fully configured ProLiant BL p-Class server blade enclosure with interconnects and up to 8 server blades, power enclosure with power supplies and power distribution Electronic CarePaq service (6-3 part number for US) | 302330-001 |
| | *Installation & Start-up Services* | |
| | Install ProLiant BL p-Class server blade enclosure including up to 8 ProLiant BL p-Class server blades and interconnects, power enclosure with power supplies and power distribution (6-3 part number for US) | 274371-002 |
| | Install ProLiant BL p-Class server blade enclosure including up to 8 ProLiant BL p-Class server blades and interconnects, power enclosure with power supplies and power distribution Electronic CarePaq service (6-3 part number for US) | 302331-001 |
| | Provides for the Installation and Start-up of Rapid Deployment Pack on a Customer supplied server designated as a Deployment Server Includes the deployment of a single server This new server will be deployed using either one of the pre-configured scripts or an image In addition, the service will provide for the capture and storage of the configuration of the newly deployed server and orientation on product usage To be delivered during standard office ours, standard office days (6-3 part number for US) | 274545-002 |
| | Note For more information, customer/resellers can contact<br>English http://www.compaq.ca/english/service/services.htm<br>French http://www.compaq.ca/Francais/service/servicesf.htm | |



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# *Memory*

## ProLiant BL20p Server Blade (2P Model)

### STANDARD MEMORY

1024-MB PC133 MHz Registered ECC SDRAM DIMM installed (2 x 512-MB SDRAM DIMM)

### STANDARD MEMORY PLUS OPTIONAL MEMORY

Up to 3072-MB of SDRAM DIMM memory is available with the installation of optional SDRAM DIMM memory expansion kits

### STANDARD MEMORY REPLACED WITH OPTIONAL MEMORY

Up to 4096-MB of SDRAM DIMM memory is available with the removal of standard memory and the installation of optional SDRAM DIMM memory expansion kits

| Memory | | Slot | | | |
|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 |
| Standard | 1024 MB | 512 MB | 512 MB | Empty | Empty |
| Optional | 3072 MB | 512 MB | 512 MB | 1024 MB | 1024 MB |
| Maximum | 4096 MB | 1024 MB | 1024 MB | 1024 MB | 1024 MB |

Following are memory options available from Compaq

- 2048-MB PC133MHz Registered ECC SDRAM Memory Kit (2 x 1024 MB) 201695-B21
- 1024-MB PC133MHz Registered ECC SDRAM Memory Kit (2 x 512 MB) 201694-B21
- 512-MB PC133MHz Registered ECC SDRAM Memory Kit (2 x 256 MB) 201693-B21
- 256-MB PC133MHz Registered ECC SDRAM Memory Kit (2 x 128 MB) 201692-B21

## ProLiant BL20p Server Blade (1P Model)

### STANDARD MEMORY

512-MB PC133 MHz Registered ECC SDRAM DIMM installed (2 x 256-MB SDRAM DIMM)

### STANDARD MEMORY PLUS OPTIONAL MEMORY

Up to 2560-MB of SDRAM DIMM memory is available with the installation of optional SDRAM DIMM memory expansion kits

### STANDARD MEMORY REPLACED WITH OPTIONAL MEMORY

Up to 4096-MB of SDRAM DIMM memory is available with the removal of standard memory and the installation of optional SDRAM DIMM memory expansion kits.

| Memory | | Slot | | | |
|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 |
| Standard | 512 MB | 256 MB | 256 MB | Empty | Empty |
| Optional | 2560 MB | 256 MB | 256 MB | 1024 MB | 1024 MB |
| Maximum | 4096 MB | 1024 MB | 1024 MB | 1024 MB | 1024 MB |

Following are memory options available from Compaq

- 2048-MB PC133MHz Registered ECC SDRAM Memory Kit (2 x 1024 MB) 201695-B21
- 1024-MB PC133MHz Registered ECC SDRAM Memory Kit (2 x 512 MB) 201694-B21
- 512-MB PC133MHz Registered ECC SDRAM Memory Kit (2 x 256 MB) 201693-B21
- 256-MB PC133MHz Registered ECC SDRAM Memory Kit (2 x 128 MB) 201692-B21



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## *Technical Specifications*

| | | | | |
|---|---|---|---|---|
| Compaq ProLiant BL p-Class Server Blade Enclosure | Dimensions | Height | 10 5 in /26 67 cm | |
| | | Width | 17 60 in/44 70 cm | |
| | | Depth | 28 88 in/73 30 cm | |
| | Input Specifications | Rated input voltage | -43 VDC to -53 VDC | Nominal -48 VDC |
| | | Rated input current | 62 5 A at -48 VDC | |
| | | Rated input Power | 3000 W | |
| | Individual server blade bay ratings | Rated input voltage | -43 VDC to -53 VDC | Nominal -48 VDC |
| | | Rated input current | 6 25 A at -48 VDC | |
| | | Rated input Power | 300 W | |
| | Temperature range | Operating | 50° to 95° F/10° to 35° C | |
| | | Non-Operating | -22° to 140° F/-30° to 60° C | |
| | Relative humidity (non-condensing) | Operating | 20% to 80% | |
| | | Non-Operating | 5% to 95% | |
| | Wet bulb temperature | Operating | 82 4° F/28° C | |
| | | Non-Operating | 101 7° F/38 7° C | |
| | Note Operating temperature has an altitude derating of 34° F/1° C per 1,000 ft/304 8 m No direct sunlight Upper operating limit is 10,000 ft/3,048 m or 70Kpa/10 1 psia Upper non-operating limit is 30,000 ft/ 9,144 m or 30 3 KPa/4 4 psia Storage maximum humidity of 95% is based on a maximum temperature of 113° F/45° C Altitude maximum for storage is 70 KPa. | | | |
| Operating and Performance Specifications for ProLiant BL20p Server Blade | Dimensions | Height | 1 69 in/4 29 cm | |
| | | Width | 10 29 in/26 14 cm | |
| | | Depth | 28 00 in/71 12 cm | |
| | Weight (maximum) | 18 0 lb/8 17 kg | | |
| | Temperature range | Operating | 50° to 95° F/10° to 35° C | |
| | | Non-operating | | |
| | | Shipping | -40° to 140° F/-40° to 80° C | |
| | | Storage | -4° to 140° F/-20° to 60° C | |
| | Relative humidity (non-condensing) | Operating | 10% to 90% | |
| | | Non-operating | | |
| | | Shipping | 10% to 90% | |
| | | Storage | 10% to 95% | |
| | Maximum wet bulb temperature | 82° F/28° C | | |
| | Note Operating temperature has an altitude derating of 34° F/1° C per 1,000 ft/304 8 m No direct sunlight Upper operating limit is 10,000 ft/3,048 m or 70Kpa/10 1 psia Upper non-operating limit is 30,000 ft/ 9,144 m or 30 3 KPa/4 4 psia Storage maximum humidity of 95% is based on a maximum temperature of 113° F/45° C Altitude maximum for storage is 70 KPa | | | |



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| | | | |
|---|---|---|---|
| Operating and Performance Specifications for RJ-45 Patch Panel | Dimensions | Height | 10.405 in/26.43 cm |
| | | Width | 1.535 in/3.899 cm |
| | | Depth | 27.697 in/70.35 cm |
| | Capability | IEEE 802.2, 802.3, 802.3u | |
| | Network transfer rate | 10 Base-T (half-duplex) | 10 Mbps |
| | | 10 Base-T (full-duplex) | 20 Mbps |
| | | 100 Base-TX (half-duplex) | 100 Mbps |
| | | 100 Base-TX (full-duplex) | 200 Mbps |
| | | 1000 Base-TX (full-duplex) | 1000 Mbps |
| | Connector | RJ-45 | |
| | Cable support | 10 Base-TX | Categories 3, 4, or 5 UTP (2 or 4 pair), up to 328 ft/100 m |
| | | 100 Base-TX | Category 5 UTP (2 pair), up to 328 ft/100 m |
| | | 1000 Base-TX | Category 5E (4 pair), up to 328 ft/100 m |
| | Power requirements | 200 mA at +5V DC, 500 mA at -48V | |
| | Temperature range | Operating | 50° to 95° F/10° to 35° C |
| | | Non-operating | -22° to 140° F/-30° to 60° C |
| | Relative humidity (non-condensing) | Operating | 20% to 80% |
| | | Non-operating | 5% to 95% |
| | Wet bulb temperature | Operating | 82.4° F/28° C |
| | | Non-operating | 101.7° F/38.7° C |

Note: Operating temperature has an altitude derating of 34° F/1° C per 1,000 ft/304.8 m. No direct sunlight. Upper operating limit is 10,000 ft/3,048 m or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft/ 9,144 m or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F/45° C. Altitude maximum for storage is 70 KPa.



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## *Technical Specifications*

| | | | |
|---|---|---|---|
| Operating and Performance Specifications for Interconnect GbE Switch | Dimensions | Height | 10.405 in/26.43 cm |
| | | Width | 1.535 in/3.899 cm |
| | | Depth | 27.697 in/70.35 cm |
| | Weight | 11.5 lb/5.2 kg per interconnect switch | |
| | Performance | 3.2 Gbps Switching bandwidth per server enclosure | |
| | | 4.4 Gbps uplink bandwidth per server enclosure | |
| | | 9.6 Million pps aggregate throughput per server enclosure (64-byte packets) | |
| | | Full-wire speed for all connections | |
| | | Auto-negotiation and auto-sensing with full-duplex support | |
| | Forwarding mode | Store and forward | |
| | MAC Addresses | 8,191 per interconnect switch, MAC address based filtering and MAC address packet priority configuring | |
| | Forwarding table age time | Maximum age: 10 to 9999 seconds, default: 3000 seconds | |
| | Memory | 32MB Main, 6MB flash and 16MB packet buffer per interconnect switch | |
| | Compliance | IEEE 802.3, 802.3u, 802.3ab, 802.3z, 802.1D, 802.1p, 802.3ac, 802.3ad (Static), 802.1Q, and 802.3x | |
| | | SNMP v1 (RFC 1157) and RMON v1 (RFC 1757) groups 1, 2, 3, and 9 | |
| | | MIB-II (RFC 1213), Bridge MIB (RFC 1493), Interface MIB (RFC 2233), 801.1Q MIB (RFC 2684), RMON1 MIB (RFC 1757) groups 1, 2, 3, and 9, and Ethernet MIB (RFC1643) | |
| | Network transfer rate | 10 Base-T (half-duplex) | 10 Mbps |
| | | 10 Base-T (full-duplex) | 20 Mbps |
| | | 100 Base-TX (half-duplex) | 100 Mbps |
| | | 100 Base-TX (full-duplex) | 200 Mbps |
| | | 1000 Base-TX (half-duplex) | 1000 Mbps |
| | | 1000 Base-TX (full-duplex) | 2000 Mbps |
| | | 1000 Base-SX (full-duplex) | 2000 Mbps |
| | Connector | RJ-45, DB-9 (C-GbE Interconnect Kit)<br>LC fiber, RJ-45, DB-9 (F-GbE Interconnect Kit) | |
| | EMI | FCC Class A | |
| | | ICES-003 Class A<br>AS/NZS 3548 Class A<br>VCCI Class A | |
| | Safety | UL/CUL Listed Accessory | |
| | Power requirements | 48V, 1050 mA, 50 W maximum (per interconnect switch) | |
| | Temperature range | Operating | 50° to 95° F/10° to 35° C |
| | | Non-operating | -22° to 140° F/-30° to 60° C |
| | Relative humidity (non-condensing) | Operating | 20% to 80% |
| | | Non-operating | 5% to 95% |
| | Wet bulb temperature | Operating | 82.4° F/28° C |
| | | Non-operating | 101.7° F/38.7° C |

Note: Operating temperature has an altitude derating of 34° F/1° C per 1,000 ft/304.8 m. No direct sunlight. Upper operating limit is 10,000 ft/3,048 m or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft/ 9,144 m or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F/45° C. Altitude maximum for storage is 70 KPa



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## *Technical Specifications*

Operating and Performance Specifications for Power Enclosures

| | | Single-Phase Model | Three-Phase Model |
|---|---|---|---|
| Dimensions | Height | 5 25 in/13 34 cm | 5 25 in/13 34 cm |
| | Width | 27 15 in/68 96 cm | 27 15 in/68 96 cm |
| | Depth | 17 60 in/44 7 cm | 17 60 in/44 7 cm |
| Weights | No hot-plug power supplies | 47 5 lb/21 55 kg | 47 5 lb/21 55 kg |
| | All hot-plug power supplies | 99 5 lb/45 13 kg | 125 5 lb/56 93 kg |
| Input requirements | Rated input voltage | 200 VAC to 240 VAC | 200 VAC to 240 VAC line to line |
| | Rated input frequency | 60 Hz | 60 Hz |
| | Rated input current per side | 24A | 24A per phase |
| | Rated input power per side | 5760 W | 9976 W |
| | Power cord | 1 NEMA L6-30P per side | 1 NEMA L15-30 per side |
| Output voltage specifications | Rated output voltage | -48 8 VDC to -54 VDC | -48 8 VDC to -54 VDC |
| | Rated output current | 99A | 170A |
| | Rated output power | 4298 W | 8310 W |
| | Nominal power | 4158 W at 208 VAC | 7202 W at 208 VAC |
| Ambient temperature range (See note) | Operating | 50° to 95° F/10° to 35° C | 50° to 95° F/10° to 35° C |
| | Shipping | -22° to 140°F/-30° to 60°C | -22° to 140°F/-30° to 60°C |
| Relative humidity, non-condensing (See note) | Operating | 20% to 80% | 20% to 80% |
| | Non-operating | 5% to 95% | 5% to 95% |
| Wet bulb temperature | Operating | 82 4° F/28° C | 82 4° F/28° C |
| | Non-operating | 101 7° F/38 7° C | 101 7° F/38 7° C |

Note Operating temperature has an altitude derating of 34° F/1° C per 1,000 ft/304 8 m No direct sunlight Upper operating limit is 10,000 ft/3,048 m or 70Kpa/10 1 psia Upper non-operating limit is 30,000 ft/ 9,144 m or 30 3 KPa/4 4 psia Storage maximum humidity of 95% is based on a maximum temperature of 113° F/45° C Altitude maximum for storage is 70 KPa



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## *Technical Specifications*

Operating and Performance Specifications for Power Distribution Devices

| | Power Bus Box | Mini Bus Bar | Scalable Bus Bar |
|---|---|---|---|
| Power enclosures or facility DC feeds supported (3U each) | 1 | 1 | 2 |
| Server blade enclosures supported (6U each) | 1 | 3 | 5 |
| Total rack height of supported enclosures | 9U | 21U | 36U |
| Dimensions | | | |
| Height | 5.1 in/12.95 cm | 19.45 in/49.40 cm | 48.57 in/123.37 cm |
| Width | 3.6 in/9.14 cm each | 19.74 in/50.14 cm | 19.74 in/50.14 cm |
| Depth | 3.25 in/8.26 cm | 2.2 in/5.59 cm | 2.2 in/5.59 cm |
| Weight | 3.62 lb/1.64 kg | 13.2 lb/59.9 kg | 26 lb/11.79 kg |
| Rated operating voltage | -43.2 VDC to -54 VDC | -43.2 VDC to -54 VDC | -43.2 VDC to -54 VDC |
| Max total power supported | 3000 W | 9000 W | 15,000 W |
| Total max input current at minimum voltage | 69.44 A at -43.2VDC | 208.32 A at -43.2 VDC | 347.2 A at -43.2 VDC (equivalent of 175A per feed) |
| Total max input current at nominal voltage | 62.5 A at -48VDC | 187.5 A at -48 VDC | 312.5 A at -48 VDC (equivalent of 175A per feed) |
| Max current per power feed | 70A | 210A | 210A |
| Max local ambient temperature | 149° F/65° C | 149° F/65° C | 149° F/65° C |

Note: All systems support redundant A & B feeds. Scalable bus bar supports dual A and dual B feeds.



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## *Technical Specifications*

| | | | |
|---|---|---|---|
| Operating and Performance Specifications for Facility DC | Voltage | Nominal input voltage | -48 VDC |
| | | Operating voltage range | -48VDC ± 10% or -43.2 VDC to -52.8 VDC |
| | | Max Input voltage slew rate | 0.5V/uS |
| | | Redundant feed voltages* (A & B) | *A and B feeds must differ by no more than 5VDC during steady state operation |
| | | Ripple/Noise | 480 mV PARD** |
| | | Overshoot | Must remain within regulation limits on all feeds during startup or shutdown |
| | | Voltage transients | Must not exceed -60 VDC |
| | Current | Max steady state input current | 62.5A per server blade enclosure installed at -48VDC |
| | | Max steady state current per feed/total | |
| | | Power bus boxes | 70 A/70A |
| | | Mini bus bars | 210 A/210A |
| | | Scalable bus bars | 210 A/350A or equivalent of 175A per feed* |
| | In-rush current | Must support up to 2X the maximum operating current per server blade enclosure (125 A) for up to 1.0 mS | |
| | Input over-current | Customer provided fusing for facility DC feeds that protects the system from catastrophic over-current within 20 uS. Fuse should sustain all in-rush and operating currents. | |
| | Max Input Current Slew Rate | 1A/uS | |
| | Max Rated Power | 3000W per server blade enclosure | |
| | Connections and Cables | Compaq provided facility DC cable connection kit:<br>• The facility DC connection kit supports the connection of up to four -48VDC, RETURN pairs and ground.<br>The power cable assemblies consist of 1/0AWG, colour-coded, flexible cable rated at 105° C, terminated with bus mating connectors at one end and unterminated at the other end. The cable length provided enables the customer to route to a fuse panel within or adjacent to the rack. | |

Note: *All systems support redundant A and B feeds. Scalable bus bars support dual A and dual B feeds.

** Periodic and random noise (PARD). Maximum allowable peak-to-peak ripple and noise (as measured at the load on any output channel). The ripple and noise is measured over a 20 Hz to 100 MHz frequency band. A resistive load (non-electronic) is used for this measurement. Each output is by-passed to return by a 10uF tantalum capacitor with an ESR less than 100 milli-Ohms in parallel with a 0.47 uF ceramic capacitor, at the point of load. The load cable is 12 feet of twisted wire capable of carrying the current. The printed wiring board assembly is installed in its enclosure for this measurement, or the measurement leads are properly shielded with Earth grounds applied to the insert.



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## *Technical Specifications*

| | | | | |
|---|---|---|---|---|
| Compaq Rack 10842 (42U)(optional) | Dimensions Height | Total Cabinet 78.7 in/199.9 cm | Shipping 85in/215.9 cm | Colour |
| | Depth | 39.691 in/100.82 cm | 48 in/121.92 cm | Graphite Metallic – doors |
| | Width | 31.5 in/ 80.01cm | 43.5 in/110.49 cm | Carbon – frame |
| | Weight | 295 lb/133.8 kg | 335lb/151.95 kg | |
| Compaq Rack 10647 (47U)(optional) | Dimensions Height | Total Cabinet 89.96 in/228.5 cm | Shipping 95.47 in/242.49 cm | Colour |
| | Depth | 39.691 in/100.82 cm | 48 in/121.92 cm | Graphite Metallic – doors |
| | Width | 24 in/60.96 cm | 32 in/81.28 cm | Carbon – frame |
| | Weight | 245 lb/111 kg | 284 lb/129 kg | |
| Compaq Rack 10642 (42U)(optional) | Dimensions Height | Total Cabinet 78.7 in/199.90 cm | Shipping 86.22 in/219 cm | Colour |
| | Depth | 39.691 in/100.82 cm | 48 in/121.92 cm | Graphite Metallic – doors |
| | Width | 24 in/ cm | 32 in/81.28 cm | Carbon – frame |
| | Weight | 253 lb/114.84 kg | 325 lb/147.52 kg | |
| Compaq Rack 10636 (36U)(optional) | Dimensions Height | Total Cabinet 68.6 in/174.24 cm | Shipping 75.25 in/191.14 cm | Colour |
| | Depth | 39.691 in/100.82 cm | 48 in/121.92 cm | Graphite Metallic – doors |
| | Width | 24 in/60.96 cm | 32 in/81.28 cm | Carbon – frame |
| | Weight | 220 lb/100 kg | 272 lb/123 kg | |
| Compaq Rack 10622 (22U)(optional) | Dimensions Height | Total Cabinet 43 in/109.22 cm | Shipping 52.25 in/132.72 cm | Colour |
| | Depth | 39.691 in/100.82 cm | 48 in/121.92 cm | Graphite Metallic – doors |
| | Width | 24 in/60.96 cm | 32 in/81.28 cm | Carbon – frame |
| | Weight | 176 lb/79.89 kg | 225 lb/102.13 kg | |
| Compaq Rack 9842 (42U)(optional) | Dimensions Height | Total Cabinet 78.7 in/199.9 cm | Shipping 86.22 in/219 cm | Colour |
| | Depth | 35.8 in/90.932 cm | 48 in/121.92 cm | Opal |
| | Width | 31.5 in/80.01 cm | 38.8 in/98.55 cm | |
| | Weight | 374 lb/170 kg | 440 lb/200 kg | |



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## *Technical Specifications*

| | | | | |
|---|---|---|---|---|
| Compaq Rack 9142 (42U)(optional) | Dimensions Height | Total Cabinet 78.7 in/199.9 cm | Shipping 83.38 in/211.79 cm | Colour |
| | Depth | 35.8 in/90.932 cm | 48 in/121.92 cm | Opal |
| | Width | 23.7 in/60.2 cm | 32 in/81.28 cm | |
| | Weight | 253 lb/114.84 kg | 325 lb/147.52 kg | |
| Compaq Rack 9136 (36U)(optional) | Dimensions Height | Total Cabinet 68.6 in/174.24 cm | Shipping 75.25 in/191.14 cm | Colour |
| | Depth | 35.8 in/90.932 cm | 48 in/12.192 cm | Opal |
| | Width | 23.7 in/60.2 cm | 32 in/81.28 cm | |
| | Weight | 165 lb/75 kg | 234 lb/106 kg | |
| Compaq Rack 9122 (22U)(optional) | Dimensions Height | Total Cabinet 43 in/109.22 cm | Shipping 52.25 in/132.72 cm | Colour |
| | Depth | 35.8 in/90.932 cm | 48 in/121.92 cm | Opal |
| | Width | 24 in/60.96 cm | 32 in/81.28 cm | |
| | Weight | 176 lb/79.89 kg | 225 lb/102.13 kg | |

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